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GIFFORD PINCHOT, Forester.

SILVICAL LEAFLET 40.

SWAMP COTTONWOOD.

Populus heterophylla Linn.

Swamp cottonwood is the fastest-growing native tree in the United States. Like other poplars, it is an advance growth over slower-growing, more tolerant, and longer-lived species, and not a permanent type. The wood is soft, light, and easily worked, and forms an excellent substitute for yellow poplar, where durability, strength, and fine texture are not essential. It is used extensively for cheap furniture, interior finish, veneering, and pulpwood. Its exceedingly rapid growth on swampy sites, not adapted to agriculture, gives it considerable silvicultural importance.

RANGE AND OCCURRENCE.

Individuals of swamp cottonwood have been found throughout the Atlantic coastal plain, in damp situations, from Connecticut to western Florida, along the Gulf coast to Louisiana, and up the Mississippi River valley to southern Indiana and Illinois. Its commercial distribution, however, is limited to that part of its range south of North Carolina in the East, and south of Kentucky in the West.

Throughout its range, swamp cottonwood is found at low altitudes, not much above tide level. It is especially abundant on moist, abandoned fields, marshes, and swamp borders.

CLIMATE.

The climatic variation throughout its range is not great, though the temperature has a seasonal range of from -10° to 110° F. Precipitation is uniformly heavy—from 45 to 55 inches.

ASSOCIATED SPECIES.

Swamp cottonwood associates with other swamp species, as overcup oak, basket oak, red maple, tupelo gum, and sweet gum. Even-aged, pure stands, however, frequently occur on old fields, and are very dense when young, but thin out rapidly as they grow older.

HABIT.

Swamp cottonwood is usually taller and better developed in bole, with smaller crown, than other eastern cottonwoods. A height of from 110 to 130 feet, with a diameter of from 2 to 3 feet, is about the average of good stands. There is usually considerable clear length, and the crown is rather small. The bark resembles a little that of shagbark hickory, as it scales off in long, narrow strips, tight at the center, and

with loosened ends. The color of the bark is gray-green, and the leaves are pale beneath.

SOIL AND MOISTURE.

A deep, moist soil, with abundant soil moisture, such as swamp borders, low-lying abandoned fields, and marshes above tidewater, are necessary for the best development of swamp cottonwood. It can stand flooding for months at a time and still retain its vigor.

TOLERANCE.

It is very intolerant throughout its life, and under even partial shade reproduction is scattering or entirely lacking. It is often found scattered over areas of young timber, where it occupies the dominant position in a two-storied forest. The under story is composed of more tolerant species, like hackberry, elm, ash, and oak. All these species started at the same time, but most of the cottonwoods, because of their faster growth, outstripped the others at the start; those that were retarded in growth before they could assume the dominant position were unable to stand the shading, and died.

GROWTH AND LONGEVITY.

A diameter increment of 1 inch a year for the first twenty years and a height increment of 4 feet a year are not uncommon. A stand on the Appalachicola River, Florida, 40 years old, was made up of trees from 110 to 130 feet in height, and from 25 to 37 inches in diameter. The height growth usually reaches its maximum at 40 years of age, the diameter growth continuing slowly until the eightieth year. Decay then sets in, and it is unusual to find a sound tree over 90 years old.

REPRODUCTION.

There is an abundant annual seed production, and the small seeds, which are equipped with fine, cottony hairs, are widely disseminated by the wind. Germination will not take place in standing water, or in dry or saline soils, as the seeds are delicate. Wherever the seed-bed is suitable, however, reproduction is excellent. Reproduction can also be obtained from suckers, cuttings, and in some cases sprouts, although stump sprouting is usually poor.

MANAGEMENT.

Its quick growth, which makes short rotations possible, especially commends swamp cottonwood as a tree suited to management. Its intolerance, its tendency to occur in even-aged stands, the necessity for full light in order to secure good reproduction, and the quick growth in early life indicate that a clean-cutting system is the most suitable. The leaving of seed trees should secure good reproduction.

Wherever natural reproduction is uncertain, a second growth can be had more surely, but at greater expense, from cuttings.